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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,063	12/09/2003	Tacho Son	46102	2962
7590	01/25/2005		EXAMINER	
Christian C. Michel Roylance, Abrams, Berdo & Goodman, L.L.P. Suite 600 1300 19th Street, N.W. Washington, DC 20036			MCCALL, ERIC SCOTT	
			ART UNIT	PAPER NUMBER
			2855	
DATE MAILED: 01/25/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/730,063	SON, TAEHO	
	Examiner	Art Unit	
	Eric S. McCall	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

APPARATUS AND METHOD FOR MEASURING THE
AMOUNT OF FUEL IN A VEHICLE USING
TRANSMISSION LINES

FIRST OFFICE ACTION

CLAIMS

35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, and 7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Davis (6,777,956).

With respect to claim 1, Davis teaches an apparatus for measuring fuel amount contained in a fuel tank of a vehicle, comprising:

transmission lines (4) provided within said fuel tank (2);

a measuring unit (5) for measuring a capacitance voltage in said transmission lines that varies in accordance with a depth of said fuel (col. 2, lines 15-20), said transmission lines being inherently supplied with a high-frequency wave.

The Examiner notes that the term “high” in the phrase “high-frequency” is deemed a relative term because no reference point has been claimed as to define the meaning of a “high” frequency and thus the Davis suggests a high-frequency wave as claimed.

With respect to claim 2, Davis suggests the measuring unit (5) comprises a housing, a circuit substrate including a measuring circuit (Fig. 2), said circuit substrate being provided within said housing, said apparatus further comprising an inherent sealing member in a connecting portion between said transmission lines and said measuring unit because if such a sealing member was not present fuel would leak from the fuel tank which is a well known undesired occurrence.

With respect to claim 4, Davis suggests the measuring circuit (5) comprises a “high”-frequency generating module (50/51) for generating a signal applied to said transmission lines (4); a capacitance voltage detecting module (66) for detecting a capacitance voltage in said transmission lines, and for calculating a depth of said fuel based on said detected capacitance

voltage (col. 2, lines 15-20); an amplifier (63) for amplifying the output signal from said capacitance voltage detecting module; and a connector for transmitting said amplified signal to an instrument panel (6) of said vehicle.

With respect to claim 7, Davis teaches the transmission lines (4) are selected from a group of “high”-frequency transmission lines consisting of a pair of transmission lines (Fig. 1).

With respect to claim 8, Davis teaches a method for measuring fuel contained in a fuel tank of a vehicle comprising the steps of:

supplying a “high”-frequency wave to transmission lines (4) provided within said fuel tank (2);

measuring an amplitude of capacitance voltage in said transmission lines wherein said amplitude varies in accordance with a depth of said fuel (col. 2, lines 15-20).

With respect to claim 9, Davis detects (5) said capacitance voltage; amplifies (63) said capacitance voltage; and transmits said amplified capacitance voltage to an instrument panel (6) of said vehicle.

35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis (6,777,956) in view of Atkinson (2001/0010171).

With respect to claim 3, as discussed above, Davis teaches a measuring circuit comprises a “high”-frequency generating module for generating a signal applied to said transmission lines; an amplifier for amplifying the output signal from said reflective wave detecting module; and a connector for transmitting said amplified signal to an instrument panel of said vehicle.

However, Davis fails to teach a reflective wave detecting module for detecting a reflective signal in the transmission lines, and for calculating a reflective coefficient by comparing the reflective signal with the signal from said high-frequency generating module and for calculating a depth of said fuel based thereon.

On the other hand, Atkinson teaches a reflective wave detecting module for detecting a reflective signal in the transmission lines, and for calculating a reflective coefficient by

comparing the reflective signal with the signal from said high-frequency generating module and for calculating a depth of said fuel based thereon (abstract).

As such, it would have been obvious to one having ordinary skill in the art armed with said teachings to use the reflective wave detecting module for calculating a depth of fuel as taught by Atkinson instead of the capacitance method as taught by Davis.

The motivation being that the two different approaches to solving the same problem (ie. determining an amount of fuel) are both known, as clearly demonstrated by the prior art, wherein one approach (capacitance) is a functional equivalent of the other approach (reflected wave) as even demonstrated by the Applicant's different embodiments of solving the same said problem and because the teaching of Atkinson clearly sets forth that both a reflective wave approach and a capacitance approach are alternatives to one another.

With respect to claims 5 and 6 and for the motivation as presented above with respect to claim 3 as to combining the teachings of Atkinson with Davis, Atkinson suggests the Applicant's claimed subject matter by disclosing a processing unit (21) which is deemed as a load resistor as claimed provided at the ends of said transmission lines (20), said transmission lines being provided within a pipe member (10) which may be made of a nonconductor, said pipe member having an open end and being provided with said fuel therein (Fig. 1).

Art Unit: 2855

RELEVANT ART

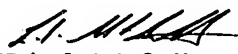
The Applicant's attention is directed to the enclosed "PTO-892" form for the prior art made of record and not relied upon but considered pertinent to the state of the art of the Applicant's disclosure.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric S. McCall whose telephone number is (571) 272-2183.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Eric S. McCall
Primary Examiner
Art Unit 2855
Jan. 21, 2005